**MOUNTAIN PLOVER**
*Charadrius montanus*

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**Management Status:** Federal: USFWS Candidate Species
California: Species of Special Concern (CDFG, 1998)

**General Distribution:**

The Mountain Plover is endemic to open, sparsely vegetated habitats in North America. The breeding range, in the dry tablelands of the western Great Plains and the Colorado Plateau, includes extreme southern Alberta, northern Montana, Wyoming, western Nebraska, Colorado, western Kansas to central and southeastern New Mexico, western Texas, and western Oklahoma. The winter range extends from northern California (rarely) through southern California, southern Arizona, and central and coastal Texas to northern Mexico (Cogswell, 1977; AOU, 1998; Knopf, 1996).

Mountain Plovers do not breed in California, but approximately 70% of the total population winters in the state (National Audubon Society unpubl. data). The major wintering areas in California are in the Sacramento, San Joaquin, and Imperial valleys. Smaller numbers winter in the west Mojave Desert (Antelope Valley, Harper Lake), San Jacinto Valley, Santa Maria Valley, Salinas Valley, the Carrizo Plain, Seal Beach, Tijuana River Valley, and the Lower Colorado River Valley.

**Distribution in West Mojave Planning Area:**

Mountain Plovers are recorded annually in fall and winter in the agricultural lands east of Lancaster, and at Harper Lake. The species may occur, at least irregularly, in Lucerne Valley (Garrett and Dunn, 1981), and on dry lakebeds throughout the Mojave Desert.

**Natural History:**

The Mountain Plover is a fairly large (9 in., 21-23 cm), drably-colored plover, slightly smaller than a Killdeer (*Charadrius vociferus*). In breeding plumage, a black loral stripe extends from the black bill to the eye, and contrasts with the white forehead and throat. A black forecrown bar and unmarked white breast distinguish Mountain Plover from all other plovers that regularly occur in North America. The sandy brown coloration of the upper parts extends to the neck and sides of the breast, and renders a motionless bird almost invisible in its habitat.

The nest is a shallow depression in the ground, often lined with plant material. The clutch of (usually) three eggs, is incubated for 28-31 days. The female may lay consecutive clutches in separate nests, and each clutch is incubated by one of the adults. The precocial young leave the nest within four hours of hatching, and are able to fly several hundred feet after 33-34 days (Baicich and Harrison, 1997).

The breeding season lasts from March to early August, after which Mountain Plovers disperse across the southern and western Great Plains before migrating to their winter areas. The migration of the species to and from California is more of an east-west movement than the typical north-south movement of migrant shorebirds in North America. In spring, Mountain Plovers

returning to their breeding areas may fly non-stop over the Sierra Nevada, the Great Basin, and the Rocky Mountains (Knopf and Rupert, 1995).

Mountain Plovers are gregarious in winter; flocks often exceed 100 birds, and sometimes number 500 birds. Opportunistic flocks range widely in search of large insects and other invertebrates. A study in California identified 2092 different food items, and found that diet differed greatly by location (Knopf, 1998). Prey is captured with a lunge at the end of a short, quick run. Flock organization is loose, and the movement patterns of flocks and individuals is highly variable (Knopf and Rupert, 1995).

In California, and in the WMPA, Mountain Plovers have been recorded rarely in late July, but most arrive in mid-October or later. Mid-November to early February is the period of peak abundance in California. Most birds are back on the breeding grounds by late March or early April, but stragglers have been recorded in California in May, and one remained at Salton Sea through the summer of 1967 (McCaskie, 1970).

**Habitat Requirements:**

In spite of the common and scientific name, Mountain Plovers do not nest in the mountains, but in relatively high elevation (2000-8500 ft, 640-2580 m) short-grass prairies and plains used historically by herbivores such as Bison (*Bison bison*), Pronghorns (*Antilocapra americana*), and prairie dogs (*Cynomys* spp.). Dense and tall cover is avoided at all seasons, and, unlike most other plovers, they are seldom found near water. Migrants are occasionally found on mudflats (e.g., Piute Ponds at Edwards Air Force Base in the Antelope Valley).

Winter areas in California historically supported Tule Elk (*Cervus elaphus nannodes*), Pronghorns, and kangaroo rats (*Dipodomys* spp.) in a "microlandscape similar to the nesting grounds" (Knopf, 1996, p.2). These areas are usually below 3000 ft (915 m) elevation. In the Sacramento and San Joaquin valleys, valley sink scrub and non-native grasslands, as well as agricultural lands, are used. In the Imperial Valley, Mountain Plovers show a preference for recently burned fields (K.C. Molina, pers. comm.).

In the WMPA, Mountain Plovers are almost exclusively associated with agricultural lands: plowed or disced fields, and fallow, harvested, or grazed alfalfa fields (K.L. Garrett, pers. comm.).

**Population Status:**

The breeding range of the Mountain Plover has been reduced substantially this century, and the populations within the current breeding range have declined drastically in recent years. Breeding Bird Survey data indicate a 3.7% ($P < 0.01$) reduction per year from 1966-1993 (Knopf and Rupert, 1995; Knopf, 1996). Knopf (1994) reported declines from virtually all breeding areas since 1966. Miller and Knopf (1993) concluded that the declines may represent problems in migration or in wintering areas and/or the continuation of long-term declines in breeding areas.

The North American population of the Mountain Plover was estimated to be 8000-10,000 after a one-day (29 January 1994) survey of all known Mountain Plover sites in California, the species' winter stronghold. Survey data indicated that approximately 7000 Mountain Plovers (approximately 70% of the North American population) winter in California. Up to 3000 Mountain Plovers were estimated to winter in Texas and Mexico (National Audubon Society unpubl. data; Knopf, 1996).

Small (1994) reported that numbers are declining in coastal California; in the interior the species is declining and very local. Only six of 105 Christmas Bird Counts in California in the winter of 1996-1997 reported Mountain Plovers (*National Audubon Society Field Notes* 51:602-648, 1997). These data accounted for only 250 in a state known to be the center of winter abundance. The Lancaster Christmas Bird Count recorded 90 Mountain Plovers, the California high count.

The Mountain Plover is a "Highest Priority Species" on the National Audubon Society's *WatchList* (Carter et al., 1996).

**Threats Analysis:**

Threats to Mountain Plovers include predation, severe weather during the nesting/fledging period, direct persecution by humans, and loss and degradation of breeding and wintering habitat (Knopf, 1996).

Eggs and chicks of Mountain Plover are susceptible to a variety of predators, including birds, mammals, and reptiles. Prairie Falcon (*Falco mexicanus*) and Kit Fox (*Vulpes macrotis*) have been observed preying on adult Mountain Plovers (Knopf and Rupert, 1995; Knopf, 1996). Extreme weather conditions may have drastic effects; Knopf (1996) reported that hail and flooding caused almost complete reproductive failure at the Pawnee National Grassland, Colorado, in May, 1995. In the 1800s and early 1900s market hunters and sport hunters found Mountain Plovers to be easy game, as the birds are unwary and tend to form tight flocks. Bent (1929, p. 267) reported that a California correspondent told of 65 being killed with two shots, and of another saying, in 1916, "they don't seem as plentiful as they were 25 years ago."

Habitat degradation and destruction is the greatest threat to the species. As the prairies were plowed and populated in the 1800s, and the bison were exterminated, the ecology of the Great Plains was forever altered. The reduction of short-grass prairie, by plow and gun (the elimination of primary grazers that kept the habitat sparsely vegetated) began the reduction and degradation of Mountain Plover habitat in the breeding range that continues to the present.

Knopf (1996) reported that agricultural practices in the southern part of the breeding range within the last 25 years may have contributed significantly to the decline of the Mountain Plover. Fields formerly left fallow through the spring are now planted with profitable crops such as sunflower and millet. Mountain Plovers begin nesting while the fields are fallow but then either fall victim to farm equipment or abandon their nests when the crop becomes too tall to satisfy the plovers' safety requirements (i.e., an obstructed view).

In the Antelope Valley, urbanization and changes in water policy that make alfalfa farming unprofitable threaten wintering Mountain Plovers. The cessation of alfalfa farming near Harper Lake may soon render the area unsuitable for wintering flocks of Mountain Plovers (E.A. Cardiff, pers. comm.).

Wintering Mountain Plovers in California are exposed to pesticides in the agricultural fields where they may spend up to 75% of the time, but there is no evidence that reproductive success or survival has been affected (Knopf, 1996).

**Biological Standards:**

Mountain Plover winter habitat in the WMPA is almost exclusively private agricultural land, and, therefore, the fate of the species in the WMPA is directly linked to agriculture. Alfalfa farming in the Antelope Valley and at Harper Lake has sustained winter flocks of Mountain

Plovers for many years, but urbanization, water policy, and the economics of alfalfa farming has caused a significant, ongoing reduction of habitat.

More so for Mountain Plovers than for most other sensitive species, habitat can be created and managed. Mountain Plovers are often found in plowed or heavily grazed fields, and recently burned fields provide night-roosting habitat (Knopf and Rupert, 1995). Since it seems unlikely that urbanization will slow in the Antelope Valley, or that the decline of alfalfa farming will halt, relatively drastic measures may be needed to ensure the sustainability of the WMPA winter population. These measures could include subsidies for alfalfa farmers, the establishment of agricultural preserves, and the encouragement of land-use practices that benefit Mountain Plovers (i.e., the periodic discing and/or burning of fields, controls on the use of pesticides). Many of the alfalfa fields used by Mountain Plovers in the Antelope Valley are grazed by sheep, so livestock ranching is also a factor in the habitat equation (K.L. Garrett, pers. comm.). Habitat management for Mountain Plovers may also benefit other sensitive wildlife such as Long-billed Curlews (*Numenius americanus*) and migrant and wintering raptors.

An important consideration for management of Mountain Plover in the WMPA is the possibility of Federal listing under the Endangered Species Act. As a "Highest Priority Species" on the National Audubon Society's *WatchList* (Carter et al., 1996), the species has been determined to be in serious decline. The winter range of Mountain Plovers in the WMPA should be precisely delineated and annual monitoring should be done to assess population trends and habitat use. Data from monitoring efforts in the WMPA could provide information on recovery or further decline of the species.

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